

REMARKS

Claims 1-15 are pending in this application. Claims 1 and 6 are the independent claims. By this Amendment, claims 1,5, and 6 are amended.

I. Title:

We have amended the title to correct a typographical error.

II. Drawings:

The drawings are objected to because the reference number “52,” shown in FIG. 3, does not point to any particular point. The Applicants respectfully traverse.

As explained on page 19 of the specification, characters “51” and “52” represent a first driven pulley and a second driven pulley. One skilled in the art would not be confused by the presence of the character “52” shown on FIG. 3 when read in light of the specification. Since character “52” is well supported in the specification and one skilled in the art would understand that “52” represents a second driven pulley, the Applicants submit that FIG. 3 should not be amended. For this reason, the Applicants respectfully request the objection to FIG. 3 be withdrawn.

III. Specification:

The abstract is objected to because it contains more than 150 words. The Applicants thank the Examiner for noting the Abstract exceeds the 150 word limit. Accordingly the Abstract is now revised to fall within guidelines laid out in MPEP 608.01(b). For this reason the Applicants respectfully request the objection to the Abstract be withdrawn.

The Examiner objects to the disclosure alleging that page 12, line 3 recites “The combining mechanism 30” and should, instead, recite “The combining mechanism 30.” The Applicants reviewed the Specification and note that the specification does reflect a space between the words “combining” and “mechanism.” As such, the Applicants assert that no correction is required and respectfully request the objection to the disclosure be withdrawn.

IV. Claim Objections:

Claims 1 and 6 are objected to because of the following informalities: the status identifiers are incorrect.

The Applicants thank the Examiner for noting the informalities regarding the status identifiers. By this amendment claims 1 and 6 are amended and are identified as "Currently Amended." For this reason the Applicants request the objection for claims 1 and 6 be withdrawn.

V. Claim Rejections – 35 U.S.C. § 112:

Claims 1-15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Applicants respectfully traverse.

The Applicants submit the Examiner erred by alleging that claim 1 discloses "a measuring tool," "an input device," "a programmable cutting apparatus" and a "communication link" which are not shown in the drawings or described in the specification. These features were never claimed, and therefore the Applicants assert the rejection is improper. The Applicants respectfully request the Examiner withdraw the 35 U.S.C. § 112, second paragraph rejection of claim 1 based on above features.

The Applicants submit the Examiner erred by alleging that "the data" of claim 1 lacks antecedent basis. Claim 1 does not recite the feature "the data" therefore the Applicants assert this rejection is improper. The Applicants respectfully request the Examiner withdraw the 35 U.S.C. § 112, second paragraph rejection of claim 1 based on the above feature.

Claim 1 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Applicants respectfully traverse.

The Examiner rejects claim 1 for six (6) reasons:

1. it is not clear how the first conversion mechanism and the rotating output shaft are related;
2. it is not clear how the rotary motion of the first drive shaft of the first conversion mechanism is converted to a reciprocal motion;
3. it is not clear which part or section of the first conversion mechanism converts the rotary motion of the first rotary shaft of the first conversion mechanism to a reciprocal motion;

4. it is not clear what “the first rotary shaft is including in a drive position provided eccentrically from the first rotary shaft” means;
5. it is not clear how the first rotary shaft is included in a drive position; and
6. it is not clear how a shaft is included in a drive position

The Applicants submit that claim 1 satisfies the statutory requirements of 35 U.S.C. § 112, second paragraph. According to MPEP 2173.02, the essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

As such, the Applicants assert that claim 1, when read in light of the specification and drawings by one skilled in the art, circumscribes the particular subject matter with a reasonable degree of clarity and particularity.

With regards to rejection 1, Claim 1 clearly relates how the rotating output shaft and first conversion mechanism are related. More specifically, the Applicants note that the last element of claim 1 reciting “wherein rotary driving force from the rotation drive source is transmitted via a belt to the first conversion mechanism...” relates the output shaft and the first conversion mechanism.

With regards to rejections 2 and 3, the Examiner is directed to the specification and drawings for example embodiments illustrating examples of how the rotary motion of a first drive shaft may be converted to reciprocal motion and which part or section of the first conversion mechanism may convert the rotary motion of the first rotary shaft of the first conversion mechanism to a reciprocal motion. For example, page 12 of the specification discloses a nonlimiting example of a conversion mechanism 10 which is comprised of a first rotary shaft 11, a first eccentric cam 12, a drive shaft 15, a first crank rod 13, a first coupling shaft 16, and a combining mechanism 30. FIG. 1 and FIG. 2 provide an example of how the example conversion mechanism could convert rotary motion associated with a first drive shaft to reciprocal motion. It should be noted that one skilled in the art would know of several configurations for converting rotary motion of a drive shaft to reciprocal

motion and that the example embodiments provided in the specification and drawings do not limit claim 1 to only those configurations.

Regarding the rejections based on 4, 5, and 6, the Applicants submit that one skilled in the art would understand the concept of a “drive position” in light of the specification. In particular, the specification explains the concept of a the drive position with regards to a nonlimiting example embodiment. More specifically, the specification explains “the first conversion mechanism 10 is coupled to the first crank rod 13 through the first drive shaft 15 in a drive position provided eccentric from the first rotary shaft 11” (see page 14 of the specification, paragraph 2). In this particular example, one skilled in the art would understand that the drive position represents a point offset from the center of the rotary shaft through which reciprocal motion could be generated and would understand that the drive position would rotate as the rotary shaft rotates. Therefore, one skilled in the art would understand how the first rotary shaft is included in drive position and how the shaft is included in a drive position.

The Examiner rejects claims 1 and 6 for the following reasons:

7. it is not clear what converts the rotary motion of the secondary rotary shaft to a reciprocal motion;
8. it is not clear how the second rotary shaft is related to the second conversion mechanism;
9. it is not clear what “a reciprocal motion in the reciprocating drive direction is included in a drive position eccentrically from the second rotary shaft, synchronously with a reciprocal motion converted by the first conversion mechanism” means;
10. it is not clear how many reciprocal motions have been claimed and how the reciprocal motions are related;
11. it is not clear how many drive positions have been claimed and how the drive positions are related to the first and second conversion mechanisms;
12. it is not clear where the first counter weight and the second counter weight are exactly located;
13. it is not clear where the center of gravity of each of the first and second counter weights are located; and
14. it is not clear what “for taking a balance with an offset load occurring upon motion conversion” means.

Regarding rejection 7, the “second conversion mechanism” converts the rotary motion of the second rotary shaft to a reciprocal motion. An example embodiment of a second conversion mechanism is explained on page 12 of the specification and illustrated in FIG. 1. According to the specification, the example second conversion mechanism could include a second rotary shaft 21, a second eccentric cam 22, a second crank rod 23, a second balancer 24, a second drive shaft 25, and a second coupling shaft 26. This example of a “second conversion mechanism” is shown in FIG. 1 and FIG. 2. More specifically, FIG. 2 illustrates how the example second conversion mechanism could convert the rotary motion of the secondary rotary shaft to a reciprocal motion. Therefore, the Applicants submit that, in light of the specification, one skilled in the art would know that the second conversion mechanism converts the rotary motion of the second rotary shaft to reciprocal motion.

Regarding rejection 8, the applicants submit that claim 1 clearly relates the rotating output shaft and first conversion mechanism. More specifically, the applicants note that the last element of claim 1 recites “wherein rotary driving force from the rotation drive source is transmitted via a belt to the... second conversion mechanism.”

Regarding rejection 9, the Applicants submit that “reciprocal motion in the reciprocating drive direction is included in a drive position eccentrically from the second rotary shaft, synchronously with a reciprocal motion converted by the first conversion mechanism” is clear to one skilled in the art when read in light of the specification. This feature contains three (3) elements: 1) reciprocal motion in the reciprocating drive direction; 2) is included in a drive position eccentrically from the second rotary shaft; and 3) synchronously with a reciprocal motion converted by the first conversion mechanism.

Regarding the first element, the reciprocating drive direction is defined in the preamble of the claim. The specification provides an example of a reciprocating drive direction as an axis of the knife drive shaft 32a. Therefore, the Applicants submit that one skilled in the art would understand this element of claim 1 and 6.

Regarding the second element, one skilled in the art would understand the concept of a “drive position” in light of the specification. As explained above, one skilled in the art would understand, by way of example embodiments, that a drive position could represent a point offset from the center of the rotary shaft through which reciprocal motion could be generated and could understand that the drive position would rotate as the rotary shaft rotates.

Regarding the third element, the applicants submit that an example of this feature is illustrated in FIG. 2. which shows how the motions of the first conversion mechanism and the second conversion mechanism could be synchronized.

Regarding rejection 10, the Applicants do not understand the question. The Applicants respectfully request that the Examiner please restate the question.

Regarding rejection 11, as stated above, please see the response to rejection 3, for a definition of a drive position and how the drive positions are related to the first and second conversion mechanisms.

Regarding rejections 12 and 13, an example of a counterweight and its location is provided on FIG. 1. As shown in the example embodiment of FIG. 1, the example counterweights are located on a 1st and 2nd eccentric cam wherein the location of the center of gravity of each counter weight is located on a side symmetric with the drive position (the location of the first and second drive shafts 15 and 25) with respect to the first and second rotary shaft (11 and 21). When read in light of the specification, one skilled in the art would know where and how to locate the counter weights and their respective centers of gravity.

Regarding rejection 14, page 16 of the specification explains how a counter weight works in conjunction with the example embodiment associated with FIG.1. The relevant part of the application is disclosed below.

The total mass of the first balancer 14 and second balancer 24 is given nearly equal to the total mass of the members, etc. existing on a delivery path of a drive force for reciprocally driving a subject of drive such as a cutting blade through the first eccentric cam 12 and second eccentric cam 22, e.g. the first crank rod 13 and second crank rod 23, the first drive shaft 15 and second drive shaft 25, the first coupling shaft 16 and second coupling shaft 26, the coupling block 31, the knife drive shaft 32, the rotary bearing 33 and the cutting blade. Because of 180-degree opposite positioning of the center of gravity 14g, 24g as a center of mass of the first balancer 14 and second balancer 24 and the first drive shaft 15 and second drive shaft 25 as a coupling of the first eccentric cam 12 and second eccentric cam 22 to the drive end 13a, 23a of the first crank rod 13 and second crank rod 23 by sandwiching the axis of the first rotary shaft 11 and second rotary shaft 21, force balance can be taken in a drive direction when causing a reciprocal motion. This makes it possible to reduce the offset load occurring during rotation of the first rotary shaft 11 and second rotary shaft 21, thus suppressing against the occurrence of vibration.

Although the Applicants submit that the claims, as submitted, satisfy the statutory requirements of 35 U.S.C. § 112, second paragraph, the Applicants amended claims 1 and 6 to further prosecution. In light of the above discussion and amendments, the Applicants request that the rejections of claim 1 and 6 based on 35 U.S.C. § 112, second paragraph be withdrawn.

VI. Claim Rejections – 35 U.S.C. § 102:

Claims 1, 3, 7 and 12 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 5,458,557 to Bladie et al. (Bladie). The Applicants respectfully traverse.

The Applicants submit that Bladie does not anticipate claim 1 because Bladie does not teach at least “a second conversion mechanism, provided in pair with the first conversion mechanism **so as not to be in contact with the first conversion mechanism...**” as recited in claim 1. The Examiner alleges that Bladie teaches a first conversion mechanism 20 and a second conversion mechanism 30. According to column 3, lines 5-15, Bladie teaches:

The circular frame 30 has teeth on its peripheral edge which interact in a region 103, situated midway between the two central axes X₁, with the peripheral teeth of another vertical circular frame 20 of the same diameter carried at its center by the second freely rotating horizontal central shaft 20a. Thus, **the circular frame 30, which is rotationally driven by the central shaft 30a, itself drives the other circular frame 20** about its central axis of rotation X₁, so that the two frames 20,30 revolve at the same speed and in opposite directions.

Further, Bladie discloses “[t]he circular frame 30, rotationally driven about the central axis X₁ by means of the central shaft 30a, **meshes with the circular frame 20**” (see column 4, lines 45 -46). Therefore, Bladie’s first conversion mechanism and the second conversion mechanism **do contact** each other, which is not what is recited in claim 1. For at least this reason the Applicants submit that Bladie does not anticipate claim 1.

The Applicants further submit that the Bladie does not anticipate claim 1 because Bladie does not teach at least a “rotary driving force from the rotation drive source is transmitted via **a belt to the first conversion mechanism and the second conversion mechanism**” as recited in claim 1. As noted above, Bladie’s conversion mechanism 20 is not driven by a belt from a rotary driving force, but instead is driven by the conversion unit 30. For at least this reason the Applicants submit that Bladie does not anticipate claim 1.

Furthermore, the Applicants submit that Bladie does not anticipate claim 1 because Bladie does not disclose at least “the first conversion mechanism including a counter weight **having a center of gravity in a position on a side symmetric with the drive position with respect to the first rotary shaft.**” Bladie discloses two counterweights, 26 and 36, wherein the centers of gravity lie between Bladie’s drive positions (24 and 34) and the centers of Bladie’s rotary shafts 31 and 21 (see Bladie, FIG. 3 and FIG. 4). Therefore, Bladie’s counterweights do not have a “center of gravity in a position on a side symmetric with the drive position **with respect to the first rotary shaft**” as recited in claim 1. For at least this reason the Applicants submit that Bladie does not anticipate claim 1.

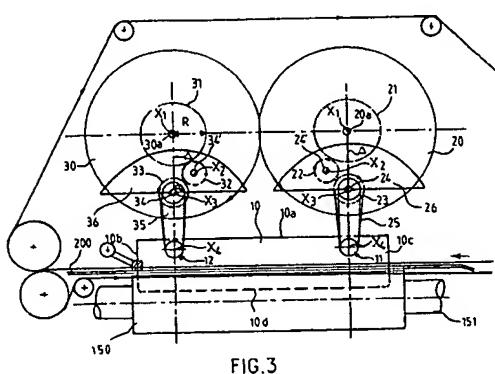


FIG. 3

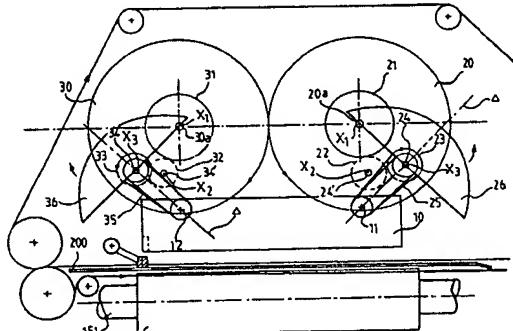


FIG. 4

Figure 1: Figure 3 and Figure 4 from Bladie, US Patent No. 5,458,557

For the above reasons the Applicants respectfully request the 35 U.S.C. § 102(b) rejection of claim 1 and all claims which depend thereon be withdrawn.

VII. Claim Rejections – 35 U.S.C. § 103:

Claims 1, 3-5, 7, 10, 12-13 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US 2,949,944 to Blachly (Blachly) in view of Bladie. The Applicants respectfully traverse.

The Applicants submit that even if combined (which is not admitted), the combination of Blachly and Bladie would not render claim 1 obvious. The Examiner admits on page 8 of the office action that “Blachly does not teach the specific of the vibration damping apparatus and the crank rod of the first and second conversion mechanisms connected to the coupling member.” Instead, the Examiner relies on Bladie to disclose the vibration damping mechanism. Neither Blachly nor Bladie disclose at least “rotary driving force from the rotation drive source is

transmitted via a belt to the first conversion mechanism and the second conversion mechanism” as recited in claim 1, therefore, even if combined, the combination would not render this feature of claim 1 obvious.

The Applicants further submit that neither Blachly nor Bladie disclose at least “the first conversion mechanism including a counter weight **having a center of gravity in a position on a side symmetric with the drive position with respect to the first rotary shaft**” as recited in claim 1, therefore, even if combined the combination would not render this feature of claim 1 obvious.

For the reasons stated above, the Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claim 1 and all claims which depend thereon be withdrawn.

Claims 6 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bladie in view of US 2,706,637 to Cain. The Applicants respectfully traverse.

The Applicants submit that even if combined (which is not admitted), the combination of Cain and Bladie would not render claim 6 obvious. Neither Cain nor Bladie disclose “the first conversion mechanism including a counter weight **having a center of gravity in a position on a side symmetric with the drive position with respect to the first rotary shaft**” as recited in claim 6, therefore, even if combined, the combination would not render this feature of claim 6 obvious.

For the reasons stated above, the Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claim 6 and all claims which depend thereon be withdrawn.

CONCLUSION

In view of the above, Applicant earnestly solicits reconsideration and allowance of all of the pending claims.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By: _____


Donald J. Daley, Reg. No. 35,094
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

DJD/DMB:lo